Perfluorodecalin

Other names:	1,1,2,2,3,3,4,4,4a,5,5,6,6,7,7,8,8,8a-Octadecafluorodecahydronaphthalene F-DC NSC 97066 Naphthalene, 1,1,2,2,3,3,4,4,4a,5,5,6,6,7,7,8,8,8a-octadecafluorodecahydro- OCTADECAFLUORODECAHYDRONAPHTHALENE PP 5 decalin perfluoride naphthalene, octadecafluorodecahydro- octadecafluorodecalin perflunafene perfluorodecahydronaphthalene
Inchi:	InChI=1S/C10F18/c11-1-2(12,5(17,18)9(25,26)7(21,22)3(1,13)14)6(19,20)10(27,28)8(23
InchiKey:	UWEYRJFJVCLAGH-UHFFFAOYSA-N
Formula:	C10F18
SMILES:	FC1(F)C(F)(F)C(F)(F)C2(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C2(F)C1(F)F
Mol. weight [g/mol]:	462.08
CAS:	306-94-5

Physical Properties

Property code	Value	Unit	Source
af	0.3920		KDB
gf	-3516.74	kJ/mol	Joback Method
hf	-3669.07	kJ/mol	Joback Method
hfus	10.55	kJ/mol	Joback Method
hvap	41.50 ± 0.50	kJ/mol	NIST Webbook
log10ws	-6.24		Crippen Method
logp	5.513		Crippen Method
mcvol	161.900	ml/mol	McGowan Method
pc	1520.00	kPa	KDB
tb	415.00	K	KDB
tb	415.00	K	NIST Webbook
tb	415.20	K	NIST Webbook
tc	566.00	K	KDB
tf	263.00	K	KDB
vc	0.773	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	507.37	J/mol×K	541.15	Joback Method
cpg	478.31	J/mol×K	475.90	Joback Method
cpg	465.83	J/mol×K	454.16	Joback Method
cpg	451.64	J/mol×K	432.41	Joback Method
cpg	435.55	J/mol×K	410.66	Joback Method
cpg	498.89	J/mol×K	519.40	Joback Method
cpg	489.27	J/mol×K	497.65	Joback Method
kvisc	0.0000024	m2/s	303.15	Viscosities of Liquid Fluorocompounds
kvisc	0.0000022	m2/s	308.15	Viscosities of Liquid Fluorocompounds
kvisc	0.0000019	m2/s	313.15	Viscosities of Liquid Fluorocompounds
kvisc	0.0000017	m2/s	318.15	Viscosities of Liquid Fluorocompounds
kvisc	0.0000028	m2/s	298.15	Viscosities of Liquid Fluorocompounds
pvap	2.05	kPa	313.22	Densities and Vapor Pressures of Highly Fluorinated Compounds
pvap	4.41	kPa	328.17	Densities and Vapor Pressures of Highly Fluorinated Compounds
pvap	2.66	kPa	318.21	Densities and Vapor Pressures of Highly Fluorinated Compounds
pvap	0.57	kPa	288.25	Densities and Vapor Pressures of Highly Fluorinated Compounds
pvap	0.73	kPa	293.25	Densities and Vapor Pressures of Highly Fluorinated Compounds

pvap	0.91	kPa	298.21	Densities and Vapor Pressures of Highly Fluorinated Compounds
pvap	1.25	kPa	303.29	Densities and Vapor Pressures of Highly Fluorinated Compounds
pvap	1.59	kPa	308.23	Densities and Vapor Pressures of Highly Fluorinated Compounds
pvap	3.45	kPa	323.18	Densities and Vapor Pressures of Highly Fluorinated Compounds
pvap	5.47	kPa	333.20	Densities and Vapor Pressures of Highly Fluorinated Compounds
srf	0.02	N/m	327.15	Surface Tension of Liquid Fluorocompounds
srf	0.02	N/m	308.15	Surface Tension of Liquid Fluorocompounds
srf	0.02	N/m	303.15	Surface Tension of Liquid Fluorocompounds
srf	0.02	N/m	298.15	Surface Tension of Liquid Fluorocompounds
srf	0.02	N/m	293.15	Surface Tension of Liquid Fluorocompounds
srf	0.02	N/m	288.15	Surface Tension of Liquid Fluorocompounds
srf	0.02	N/m	318.15	Surface Tension of Liquid Fluorocompounds

Sources

Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
Densities and Vapor Pressures of Highly Fluorinated Compounds:	https://www.doi.org/10.1021/je050056e
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C306945&Units=SI
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l

Low pressure solubility and thermodynamics of solvation of oxygen, carbon dioxide, and carbon monoxide in fluorinated liquids:	https://www.doi.org/10.1016/j.jct.2006.11.012
Viscosities of Liquid Fluorocompounds:	https://www.doi.org/10.1021/je700632z
(Liquid + liquid) equilibria of perfluorocarbons with fluorinated ionic liquids:	https://www.doi.org/10.1016/j.jct.2013.04.019
Surface Tension of Liquid Fluorocompounds:	https://www.doi.org/10.1021/je060199g
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
KDB:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1762

Legend

af:	Acentric Factor
cpg:	Ideal gas heat capacity
gf:	Standard Gibbs free energy of formation
hf:	Enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
hvap:	Enthalpy of vaporization at standard conditions
kvisc:	Kinematic viscosity
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
pvap:	Vapor pressure
srf:	Surface Tension
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume

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